ZooKeys 5: 41-51 (2009)
doi: 10.3897/zookeys.5.83
www.pensoftonline.net/zookeys

RESEARCH ARTICLE

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# A new species of *Oligoxystre* Vellard 1924 (Araneae, Theraphosidae) from Brazil

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Academic editor: *Jeremy Miller* | Received 13 January 2009 | Accepted 5 February 2009 | Published 16 February 2009

*urn:lsid:zoobank.org:pub:4B010318-9317-4B6B-9958-F633BC2E7FB5*

**Citation:** Bertani R, Santos T dos, Righi AF (2009) A new species of *Oligoxystre* Vellard 1924 (Araneae, Theraphosidae) from Brazil. ZooKeys 5: 41-51. doi: 10.3897/zookeys.5.83

## Abstract

A new species of *Oligoxystre*, *Oligoxystre diamantinensis* **sp. n.**, is described from Brazil. Male can be distinguished from all other *Oligoxystre* species by the male palpal bulb lacking a small subapical keel on the embolus in conjunction with the embolus length (less than 2.5 times the tegulum length) and by the tibial spur being inserted in a perpendicular angle in relation to the tibia axis. Female can be distinguished by the spermathecae being much more longer than wide, lacking lateral lobes and having a large terminal lobe with five smaller lobes around it. Additionally, males and females can be distinguished by the general blue metallic color pattern contrasting with the reddish setae on the abdomen. A key for all described *Oligoxystre* species is presented. The cladistic relationship of *O. diamantinensis* **sp. n.** with the other *Oligoxystre* species is discussed and data on its habitat is provided.

## Keywords

Ischnocolinae, Campo Rupestre, Diamantina, Minas Gerais, Neotropical, Spider taxonomy

## Introduction

The genus *Oligoxystre* Vellard, 1924 comprises six species of small theraphosids recorded in Brazil and Bolivia. The type species, *Olygoxystre auratum* Vellard, 1924, was described

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from Catalão, State of Goiás, Brazil based on a single male and several juveniles (Vellard 1924). Raven (1985) synonymized the genus *Cenobiopelma* Mello-Letão & Arlé, 1934 with *Oligoxystre* thus adding two species to the genus, *Olygoxystre mimeticum* (Mello-Leitão & Arlé, 1934) and *Olygoxystre argentinense* (Mello-Leitão & Arle 1934). Guadanucci (2004) transferred *O. argentinense* to his new genus *Catumiri* Guadanucci, 2004. Later, the same author revised the genus *Oligoxystre*, described four new species, synonymized *Pseudoligoxystre* Vol, 2001 with *Oligoxystre* and considered *Cenobiopelma mimeticum* a nomem nudum (Guadanucci 2007). In his Catalog, Platnick (2008) disagreed with this interpretation and considered *C. mimeticum* a nomem dubium.

In a recent herpetological survey carried out in the city of Diamantina, State of Minas Gerais, Brazil, a new species of *Oligoxystre* was discovered and is herein described.

## Material and methods

All measurements are in mm.

A Nikon SMZ1500 dissecting microscope was used for illustrations (with a camera lucida attachment).

Leg spines terminology follows Petrunkevitch (1925) with modifications proposed by Bertani (2001).

Specimens are deposited in the Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZSP) and Instituto Butantan, São Paulo, Brazil (IBSP).

Abbreviations:

ALE = anterior lateral eyes, AME = anterior median eyes, PLE = posterior lateral eyes, PLS = posterior lateral spinnerets, PME = posterior median eyes, PMS = posterior median spinnerets, STC = superior tarsal claws.

## Taxonomy

### *Oligoxystre* Vellard 1924

*Oligoxystre* Vellard, 1924:151, pl. 10, fig. 38, type species *Oligoxystre auratum* Vellard, 1924 by original designation, type should be in Instituto Vital Brazil, Niterói, Brazil, supposed lost (Raven 1985; Guadanucci 2007); Roewer 1942: 235; Raven 1985: 119-120; Guadanucci 2007: 2; Platnick 2008.

*Pseudoligoxystre* Vol, 2001: 4-6, 7 figs (type-species *Pseudoligoxystre bolivianum* Vol, 2001). First synonimized by Guadanucci 2007: 4.

**Diagnosis.** See Guadanucci (2007).

**Species included.** *Oligoxystre auratum* Vellard, 1924, *Oligoxystre bolivianum* (Vol, 2001), *Olygoxystre caatinga* Guadanucci, 2007, *Olygoxystre dominguense* Guadanucci,

2007, *Olygoxystre tucuruiense* Guadanucci, 2007, *Olygoxystre rufoniger* Guadanucci, 2007 and *O. diamantinensis* sp. n.

**Identification key for *Oligoxystre*.** Modified from Guadanucci (2007). Female of *Oligoxystre auratum* is undescribed.

**Males**

1 Male palpal bulb embolus with small subapical keel (Guadanucci 2007: Figs 2-5, 26-28) ..... 2

– Embolus without keel (Figs 1-3; Guadanucci 2007: Figs 22-23, 31-32, 35-36) ..... 3

2 Embolus long and thin, slightly bent distally (Guadanucci 2007: Figs 26-28) ..... ***O. dominguense***

– Embolus short, strongly bent medially (Guadanucci 2007: Figs 2-5) ..... ***O. bolivianum***

3 Bulb twisted on itself, prolonged by long collar, depressed at base and thin apical end, curved (Vellard 1924: 152, pl. 10 Fig. 38)..... ***O.* auratum**

– Bulb not as above..... 4

4 Embolus more than 3 times longer than tegulum (Guadanucci 2007: Figs 22-23); spiders with cephalothorax and abdomen dark ventrally; white setae over dorsal region of cephalothorax (Guadanucci 2007: Fig. 38) ***O. caatinga***

– Embolus less than 2.5 times tegulum length (Figs 1-3, Guadannuci 2007: Figs 31-23, 35-36); spiders with coloration on ventral portion browish or yellowish; without white setae on body ..... 5

5 Leg I tibial spur positioned in a perpendicular angle in relation to the tibia axis (Figs 4-5); spiders with carapace, chelicerae, abdomen and legs covered dorsally and ventrally with metallic blue setae (Fig. 7)..... ..... ***O. diamantinensis* sp. n.**

– Leg I tibial spur with branches positioned in an inclined angle in relation to the tibia axis (Guadanucci 2007: Figs 30, 34); spiders with carapace and legs browish or reddish ..... 6

6 Embolus slightly bent distally (Guadanucci 2007: Figs 31 32); carapace and legs brown ..... ***O. tucuruiense***

– Embolus slightly curved distally (Guadanucci 2007: Figs 35-36); carapace and basal portion of legs reddish and distal portions of legs dark (Guadanucci 2007: Fig. 39) ..... ***O. rufoniger***

**Females**

1 Spermatheca receptacula as long as wide (Guadanucci 2007: Fig. 6) ..... ..... ***O. bolivianum***

– Spermatheca receptacula longer than wide (Figs 6; Guadanucci 2007: Figs 24, 29, 33, 37)..... 2

2 Spermatheca receptacula without lateral lobes (Figs 6; Guadanucci 2007: Figs 24, 29)..... 3

– Spermathecae receptacula with at least one lateral lobe (Guadanucci 2007: Figs 29, 33, 37) ..... 4

3 Spermatheca receptacula long, with small apical lobes of roughtly the same size (Guadanucci 2007: Fig. 24); white setae over dorsal region of cephalothorax, ventral cephalothorax and abdomen very dark ..... ***O. caatinga***

– Spermatheca receptacula with a large lobe surrounded by other smaller lobes (Fig. 6); spiders with carapace, chelicerae, abdomen and legs covered dorsally and ventrally with metallic blue setae (Fig. 8) ..... ***O. diamantinensis* sp. n.**

4 Spermatheca receptacula very long and thin, with small lobes over entire length (Guadanucci 2007: Fig. 29) ..... ***O. dominguense***

– Spermatheca receptacula long, with wide base, bearing lateral lobe towards outside (Guadanucci 2007: Figs 33, 37) ..... 5

5 Lateral lobe bifurcated (or partly bifurcated) (Guadanucci 2007: Fig. 33); carapace and legs brown..... ***O. tucuruiense***

– Lateral lobe not bifurcated (Guadanucci 2007: Fig. 37); carapace and basal region of legs reddish, apical region of legs dark..... ***O. rufoniger***

***Oligoxystre diamantinensis* sp. n.**

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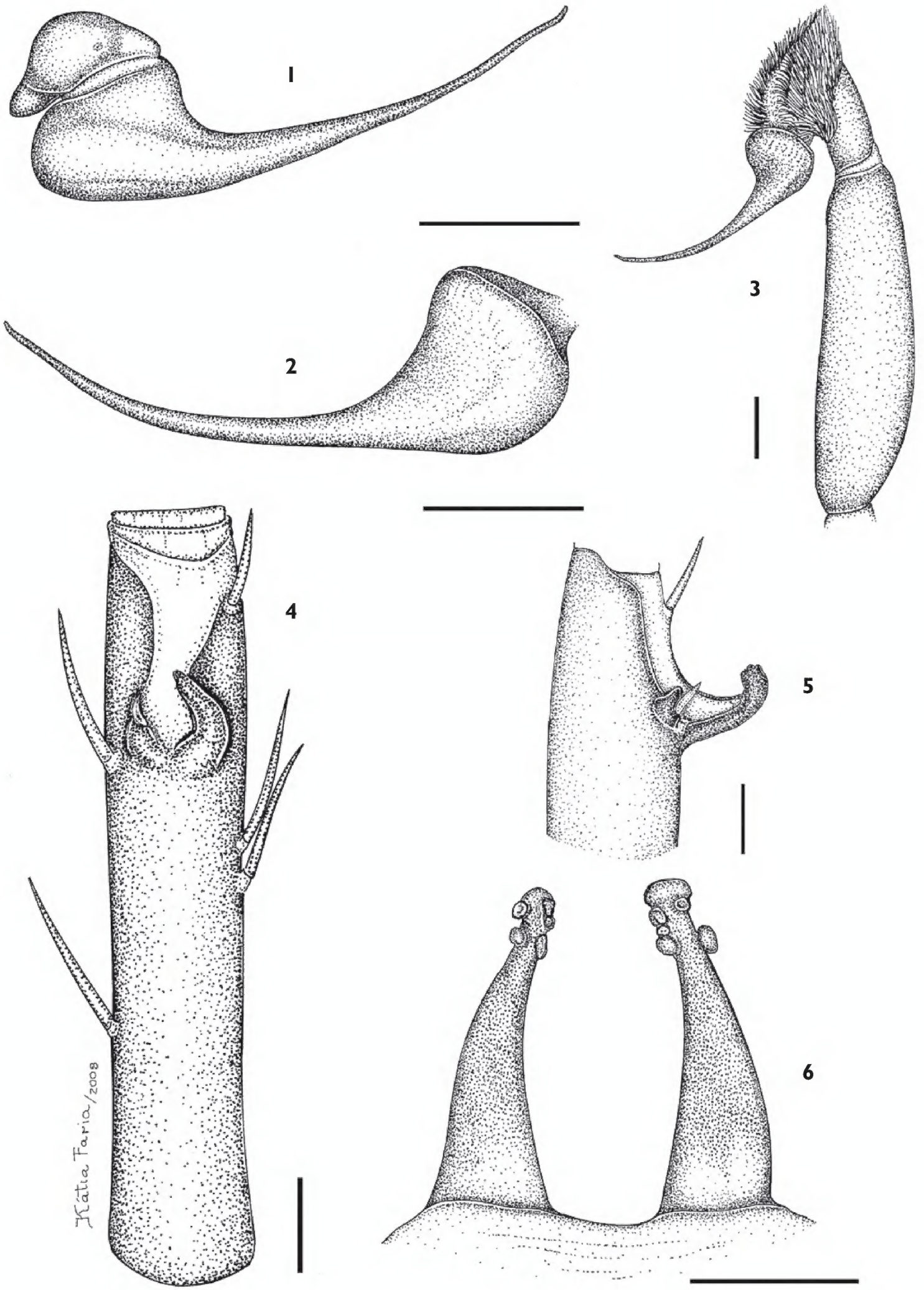
Figures 1-9

**Type material.** Holotype: male: Brazil, Minas Gerais, Diamantina, 18°13'57.2"S 43°35'14.9"W, 04.XII.2005, T. dos Santos & A. F. Righi (MZSP 29071).

Paratypes: male (MZSP 29072) and female (MZSP 29073) same data and collectors.

**Other material examined.** *Oligoxystre bolivianum*, 1 male, Brazil, State of Mato Grosso, Chapada dos Guimarães 15°27'S 55°44'W, 19 March 1992, D. Pinz (IBSP 9495), 1 female, February 1991, S.M. Lucas (IBSP 9504); *O. caatinga*, 1 male, Brazil, State of Piaui, Parnaiba 2°54'S 4'°45'W, November 1994, R. Bertani (IBSP 9499), 1 female, same data (IBSP 9473); *O. dominguense*, 1 male (holotype), Brazil, state of Goiás, São Domingos 13°23'S 46°19'W, April 2000, A. Chagas Junior & M.G. Bichuettte (IBSP 8625), 1 female (paratype) Minaçú, Serra da Mesa 13°49'S 48°18'W (IBSP 9467); *O. rufoniger*, 1 male, Brazil, state of Bahia, Palmeiras, Parque Nacional da Chapada Diamantina, 12°28'070"S 41°25'175"W, inside bromeliads, 15 February 2008, R. Bertani, C.S. Fukushima e R.H. Nagahama (MZSP 29101), 1 female (paratype), Central, Toca da Esperança 11°08'S 42°06'W, July 2000, A.D. Brescovit et al. (IBSP 8553); *O. tucuruiense*, 1 male (holotype), Brazil, State of Pará, Tucuruí 3°45'S 49°40'W (IBSP 9459), 1 female (paratype), 01 July 1984, C. Pantoja & R.S. Pereira (IBSP 7936).

**Diagnosis.** Male of *O. diamantinensis* sp. n. can be distinguished from *O. bolivianum* and *O. dominguense* by the absence of a small subapical keel on the male palpal bulb embolus (Figs1-3); from *O. caatinga* by the embolus being shorter than 2.5 times the tegulum length (Figs 1-3); from *O. tucuruiense*, *O. rufoniger* and *O. auratum* by the tibial spur being inserted in a perpendicular angle in relation to the tibia axis (Figs.




**Figs 1-6.***Oligoxystre diamantinensis* sp. n. holotype male 1. left male palpal bulb, prolateral view; 2. left male palpal bulb, retrolateral view; 3. left palp, retrolateral view; 4. left leg I spur, ventral view; 5. Left leg I spur, prolateral view; Paratype female 6. spermathecae, dorsal view. Scale bar: 1 mm.

4-5). Female can be distinguished from *O. bolivianum* by the spermathecae being much more longer than wide; from *O. dominguense*, *O. rufoniger* and *O. tucuruiense* by the absence of lateral lobes in the spermathecae; and from *O. caatinga* by the spermathecae having a large terminal lobe with five smaller lobes around it (Fig. 6), instead of several small lobes. Additionally, males and females can be distinguished by the general blue metallic color pattern and the reddish setae on the abdomen (Figs 7-8), instead of the general browish to reddish pattern shown by the other species. The metallic blue color is not lost in specimens preserved in alcohol, indicating its origen to be structural instead of due to the presence of biological pigments.

**Etymology.** Named after the type-locality, the city of Diamantina, in the state of Minas Gerais, Brazil.

**Description.** Male (holotype)(Figs 1-5, 7): Total length with chelicerae: 25.5. Carapace: length 9.3, width 8.6. Abdomen: length 11.2, width 6.4. Eye tubercle low, length 1.1, width 2.0. Labium: length 0.8, width 1.5. Sternum: length 4.6, width: 3.7. Cephalic region low, hardly distinct. Thoracic striae undistinguishable. Fovea short, deep, straight. Chelicerae without rastellum, basal segments with 9 teeth. Clypeus absent. Anterior eye row procurved, posterior slightly recurved. AME round, diameter 0.35, 0.39 apart; ALE elliptical, 0.44 x 0.26, 1.07 apart. Posterior eye row slightly recurved; PME ovoid, 0.28 x 0.23, 0.78 apart; PLE ovoid, 0.39 x 0.18, 1.39 apart. Labium with 8 cuspules. Maxilla subrectangular, anterior lobe distinctly produced into conical process, inner angle bearing 25 cuspules. Sigilla on sternum undistinguishable. PMS one-segmented, 1.0 in length; PLS three-segmented, basal segment 2.28, median 1.87, apical 2.54. Claw tufts present; STC without teeth. Tarsi I-IV scopulate, IV with sparse row of setae; metatarsus I scopulate along a third of segment length, II 4/5 of its length, III 3/5 and IV 2/5 of their lengths. Femur IV without retrolateral scopula. Stridulatory setae absent. Length of legs and palp in Table 1. Spines: tarsi lacking spines. Palpal femur p0-0-1, patella 0, tibia p1-2-1; legs I femur p0-0-1, patella 0, tibia v 2-2-2(1ap), metatarsus v1-0-0; II femur p0-0-1, patella 0, tibia v1-2-3(2ap), p1-0-1, metatarsus v1-0-0; III femur p0-1-1, r0-2-2, patella 0; tibia v3-3-2ap, p1-0-1, r1-0-1, metatarsus v0-2-3ap, p1-0-1, r1-0-1; IV femur p0-0-1, r0-1-2, patella 0, tibia v3-3-2ap, p1-0-1, r2-0-1, metatarsus v1-3-3ap, p1-0-1, r0-1-1. Male tibial spur small, with two branches slightly curved, originating from common, raised base (Figs 4-5). Retrolateral branch longer than prolateral. Spur branches inserted in a perpendicular

**Table 1.** *Oligoxystre diamantinensis* sp. n. Male Holotype. Length of left legs and palpal segments.

| | Palp | I | II | III | IV |
|---|---|---|---|---|---|
| Tarsi | 1.9 | 4.4 | 4.3 | 4.0 | 4.5 |
| Metatarsi | --- | 7.6 | 7.3 | 7.1 | 10.2 |
| Tibiae | 4.8 | 7.7 | 6.9 | 6.3 | 8.5 |
| Patellae | 3.8 | 5.1 | 5.0 | 4.1 | 4.5 |
| Femora | 5.9 | 9.4 | 9.0 | 8.1 | 9.9 |
| Total | 16.4 | 34.2 | 32.5 | 29.6 | 37.6 |

angle in relation to the tibia axis (Fig. 5). Distance from tibia apex and the spur basis a quarter of the tibia length (Fig. 4). Metatarsus I slightly bent at basal portion, passing laterally the retrolateral branch of tibial spur when flexed. Male palpal bulb with short subtegulum, not extending down bulb. Bulb globose, embolus long, 2.4 times longer than the tegulum, tapering to the tip and with a slight curvature on its distal quarter region (Figs 1-3). Male palpal bulb keels absent. Urticating hairs absent. General color pattern of tegument golden-brown. Carapace, chelicerae, abdomen and legs covered dorsally and ventrally with metallic blue setae. Leg rings and longitudinal stripes on the patellae and tibiae hardly distinct. Abdomen covered with abundant long red setae and some short metallic blue setae. Anterior region with a stripe of red setae (Fig. 7).

Female (Paratype)(Figs 6, 8): Total length with chelicerae: 37.6. Carapace: length 10.9, width 9.9. Abdomen: length 19.8, width: 11.9. Eye tubercle: length 1.4, width 2.0. Labium: length 1.1, width 1.9. Sternum: length 5.2, width: 4.6. Cephalic region slightly elevated. AME round, diameter 0.36, 0.29 apart; ALE elliptical, 0.52 x 0.32, 1.23 apart. Posterior eye row slightly recurved; PME ovoid, 0.46 x 0.32, 0.92 apart; PLE ovoid, 0.41 x 0.24, 1.43 apart. Labium with 6 cuspules. PMS one-segmented, 1.52 in length; PLS three-segmented, basal segment 2.89, median 1.89, apical 2.99. All other characters as in male, except: metatarsi I and II scopulate along the full length of the segment, III 7/10 and IV 2/5 of their lengths. Length of legs and palp in Table 2. Spines: tarsi lacking spines. Palpal femur p0-0-1, patella 0, tibia v2-1-4ap, p0-1-0; legs I femur p0-0-1, patella 0, tibia v1-1-2ap, p1-0-1, metatarsus 0; II femur p0-0-2, patella 0, tibia v2-0-1ap, p1-1-0, metatarsus v1-0-0; III femur p0-0-2, r0-0-1, patella 0; tibia v1-2-2ap, p1-1-0, r1-1-0, metatarsus v2-0-4ap, p1-0-1, r1-0-1; IV femur r0-0-1, patella 0, tibia v1-3-3(2ap), p1-0-0, r1-0-1, metatarsus v0-4-3ap, p1-0-1, r1-0-1. Two spermathecae weakly sclerotized, long, ending in a large terminal lobe, two smaller lobes on the external region and three tiny lobes on the internal region, all them closely positioned (Fig. 6). Color pattern as in male (Fig. 8).

**Variation** (Male paratype). Length of legs and palp in Table 3. Spines: tarsi lacking spines. Palpal femur p0-1-1, patella 0, tibia p0-2-2; legs I femur p0-0-1, patella 0, tibia v 1-1-1ap, p 1-1-0, r 1-1-0, metatarsus v1-0-0; II femur p0-1-1, patella 0, tibia v1-1 -2ap, p1-1-0, metatarsus v1-0-0; III femur p1-1-1, r0-2-1, patella 0; tibia v1-3-2ap, p1-1-0, r1-1-0, metatarsus v3-0-4ap, p1-1-1, r0-1-1; IV femur p0-0-1, r0-2-1, patella 0, tibia v2-3-2ap, p1-1-0, r1-1-0, metatarsus v1-2-4ap, p1-0-1, r1-0-1.

**Table 2.** *Oligoxystre diamantinensis* sp. n. Female Paratype. Length of left legs and palpal segments.

| | Palp | I | II | III | IV |
|---|---|---|---|---|---|
| Tarsi | 4.3 | 3.8 | 3.2 | 3.1 | 3.8 |
| Metatarsi | --- | 5.9 | 5.6 | 6.0 | 8.1 |
| Tibiae | 3.8 | 6.2 | 5.8 | 5.1 | 7.3 |
| Patellae | 4.0 | 5.6 | 5.0 | 4.3 | 4.5 |
| Femora | 6.3 | 8.5 | 7.7 | 7.2 | 9.1 |
| Total | 18.4 | 30.0 | 27.3 | 25.7 | 32.8 |

**Figs 7-8.** *Oligoxystre diamantinensis* sp. n. 7. holotype male; 8. paratype female. Photos: 7 Alexandre Righi; 8 Rogério Bertani.

**Relationship.** The cladogram proposed by Guadanucci (2003) and partially reproduced in Fig.9 shows *Oligoxystre* as a monophyletic genus sister to the clade *Pterinochilus* sp. (*Avicularia avicularia* (Linnaeus, 1758) (*Euathlus vulpinus* (Karsch, 1880) + *Vitalius vellutinus* (Mello-Leitão, 1923)) united by three non-exclusive synapomorphies (node A): few cuspules on the maxillae (character 1) (homoplasy shared with *Catumiri* spp.), few cuspules on the labium (character 2) (homoplasy shared with *Ischnocolus algericus* Thorell, 1875 + *Catumiri* spp. and *Euathlus vulpinus*), and the labium wider than long (character 3) (homoplasy shared with *Ischnocolus algericus* + *Catumiri* spp.). *Oligoxystre* is divided into two fully dichotomous clades. One of the clades (node B) has the monophyletic group *O. tucuruiense* + *O. rufoniger* defined by a homoplasious apomorphy, the presence of lateral lobes in the spermatheca (character 4) (shared with *Euathlus vulpinus*). The other clade has the monophyletic group *O. bolivianum* + *O. dominguense* (node D) sharing the presence of keels in the male palpal bulb embolus (character 6) as a synapomorphy. The sister-group of this clade (node C) is *O. caatinga* which shares with *O. bolivianum* + *O. dominguense* and other external taxa (*Sickius longibulbi* Soares & Camargo, 1948 (*Ischnocolus algericus* + *Catumiri* spp.)) the presence of a short clypeus (character 5). *Oligoxystre diamantinensis* sp. n. exhibits the three generic synapomorphies (characters 1-3), but the female lacks the lateral lobe in the spermatheca (character 4) and the male does not have keels in the embolus (character

**Table 3.** *Oligoxystre diamantinensis* sp. n. Male Paratype. Length of left legs and palpal segments.

| | Palp | I | II | III | IV |
|---|---|---|---|---|---|
| Tarsi | 1.9 | 4.0 | 4.2 | 3.8 | 4.3 |
| Metatarsi | --- | 7.2 | 6.9 | 7.2 | 9.8 |
| Tibiae | 4.4 | 7.2 | 6.6 | 6.1 | 8.3 |
| Patellae | 3.7 | 5.2 | 4.8 | 3.7 | 4.4 |
| Femora | 5.5 | 9.0 | 8.5 | 7.6 | 9.4 |
| Total | 15.5 | 32.6 | 31.0 | 28.4 | 36.2 |

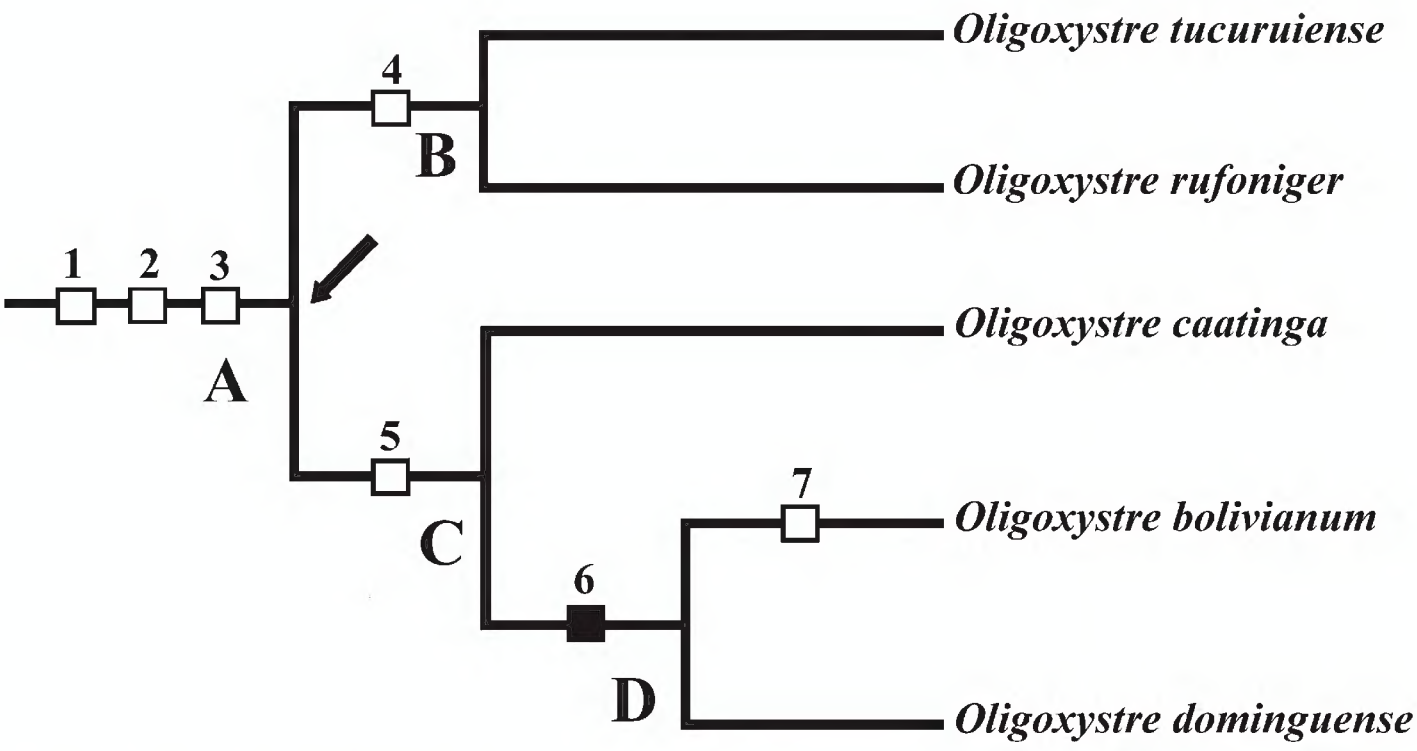



**Fig. 9.** Part of Guadanucci's (2003) cladogram showing *Oligoxystre* species relationship. Characters: 1 few cuspules on the maxillae; 2 few cuspules on labium; 3 labium wider than long; 4 spermathecal lateral lobe present; 5 clypeus narrow; 6 keel on male palpal bulb embolus present; 6 spermatheca as long as wide. Black square = synapomorphy. White square = homoplasy. The arrow indicates the probable position of *Oligoxystre diamantinensis* sp. n. in the cladogram.

6). Furthermore, both male and female lack a clypeus (plesiomorphic state for character 5). Thus, the new species lack all the apomorphies for the two clades and possibly would be in a basal trichotomy in that cladogram (indicated by an arrow in Fig. 9).

Concerning *O. auratum*, Vellard (1924) presented a detailed description of the species which allows to distinguish it from *O. diamantinensis* sp. n. *Oligoxystre auratum* has an overall browinsh pattern whereas the new species has a blue mettalic color (Figs 7-8). The *O. auratum* tibial spur illustration (Vellard 1924: 152, pl. 10 Fig. 38d) shows the branches in a parallel position with the tibia axis whereas in *O. diamantinensis* sp. n. the tibial spur branch axis is perpendicular in relation to the tibia axis (Fig. 5).

**Distribution.** Only known from type locality.

**Habitat description.** The specimens were found in "campo rupestre" areas (Figs 10-11), characterized by its height above sea level – above 900m, in association with a high degree of outcropping and consequent reduction of soil depth (Giulietti and Pirani 1988). The vegetation in the area of occurrence of *O. diamantinensis* sp. n. have predominantly specimens of the families Asteracea, Melastomatacea, Gramineae, Cyperacea, Cactacea, Eicaceae, Leguminosacea, Velloziaceae, Eriocaulacea and Xyridacea (Silva et al. 2005).The climate is tropical – temperature ranging from 18 to 20°C, minimum 4°C in June/July reaching 35°C by December/January (Silva et al. 2005). The rainy season extends from November to March (precipitation mean 223.19 mm). In the dry season from June to August the pluviosity mean falls to about 8.25 mm (Silva et al. 2005). The relative humidity varies between 72.33% and 89.75% (for

**Figs 10-11.** Campo Rupestre area in Diamantina, Minas Gerais, Brazil. Photos: Alexandre Righi.

2001 and 1995, respectively) (Silva, et al. 2005). The three collected specimens were found in altitudes about 1.250m a.s.l, always in rocky places, either inside crevices or under large stones where they normally build silky tunnels.

## Acknowledgments

We would like to thanks Dr. Ricardo Pinto da Rocha for providing a repository for the types. Special thanks go to Mrs. Katia de Mendonça Faria who kindly made the figures. Caroline S. Fukushima is thanked for the critical review of the text. Financial support: PROBIC (Programa Institucional de Bolsas de Iniciação Científica da Fundação de Amparo à Pesquisa do Estado de Minas Gerais) 2005/02 for AFR and FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo) 03/12587-4 for RB.

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